CASES OF PACHYMENINGITIS, CEREBRAL AND SPINAL, WITH RECORDS OF POST-MORTEMS.

By C. L. DANA, A.M., M.D.

NEW YORK.

THE following cases occurred at Bellevue Hospital, and the histories were written or collected by me when interne there. The notes were made with no expectation that they would be published, and they are not so complete as could be wished. The fact however, that autopsies were made in all the cases except one renders them of some importance, and will justify, I trust, their publication.

CASE I.—HYPERTROPHIC CERVICAL MENINGITIS.

Comments.—The first case is one of cervical hypertrophic pachymeningitis. This disease was first described by Charcot in 1871, and later by Jeoffroy in 1873. Since then the contributions to the literature have been, so far as I can learn, entirely from French and American writers, except one case reported by Sciamana.[1] Dr. V. P. Gibney has reported three cases occurring in children.[2]

The disease is particularly worthy of study on account of its slow progress and the opportunity it gives to watch the gradual involvement of different portions of the cord. Jeoffroy describes two stages, a meningitic, or "période douloureuse," and a myelitic stage, characterized by paralyses

[1] *Italia Med.*, Genova, 1881, 2 S., xv, 81–84.

[2] *Med. Record*, Sept. 25, 1880, p. 340.

and atrophies. The disease may begin in either of two ways: With a predominance of localized cervical symptoms (cervical form), or with the symptoms chiefly in the extremities (peripheric form). The case whose history is related here belongs to the latter and rarer category. A further peculiarity of my case is that the meningeal and myelitic stages can hardly be distinguished.

The prominent symptoms, as the case progressed, may be enumerated as follows, those which are rarer being put in italics: Peripheral disturbances, such as parasthesiæ, hyperæsthesia, anæsthesia, and pains initiating the disease; rigidity and contraction of extremities; muscular atrophy; paralyses of upper extremities and of *intercostal muscles;* exaggeration of reflexes; *hyperæsthesia of lower extremities;* digestive disturbances; progressive involvement of all extremities; articular pains; tremors; *no marked "main en griffe";* rigidity and some pains in neck and back; *brief, violent muscular spasms of whole body.*

In regard to the location of the lesion: the early impairment of the hands and deltoids and non-involvement of trapezii and sterno-mastoids, would indicate that the part of the cord between the sixth cervical and second dorsal was most affected. From the comparative non-impairment of reflexes, the slight muscular atrophy, absence of delayed sensation and of pupillary disturbances, and from the presence of coördinating power, one infers that there was only a slight involvement of the gray matter, and this chiefly in the anterior parts. The rigidity and spasms show some lateral degeneration. The lesion was plainly more upon the left side, and involved from the beginning both the anterior and posterior roots. The presence of anæsthesia in the arms and legs shows the gradual involvement of the deeper parts of the lateral columns up which sensations tactile are carried.

In regard to the cause of the disease, it is interesting to note that here, as in other cases, there was a remotely traumatic element. The patient had had syphilis thirteen years before. The course of the pachymeningitis was not influenced by anti-syphilitic treatment, however, and I think that errors are sometimes made in considering all post-syphilitic affections as due to that disease.

The patient has recently developed symptoms which resemble somewhat those described by Dr. W. S. Searle as belonging to "A new form of nervous disease."

History.—The patient[1] is an Irishman aged 40. The family history is unimportant. Patient has been a strong, healthy, hard-working man, drinking moderately. Sixteen years ago his left eye was injured by a piece of iron; iridectomy was performed, and his sight restored. Thirteen years ago he had syphilis. Six years ago he was greatly injured by a fall. He was at the top of a double ladder, 50 feet high, and was trying to remove a circular iron window-frame four feet in diameter. By accident the window fell over on him; his head went through one of the panes, so that he was caught round the neck by the sash and thrown to the ground. He struck between the beams of an unfinished floor, the strength of the blow coming upon the lower part of the lumbar region, on the right side. His neck was also cut on the left side and considerably injured. He was laid up in bed for three months by this injury. He had no paralysis, but so much pain and stiffness in his back that he could not use his limbs. His urine was passed more slowly and in a feebler stream, and his bowels were obstinately constipated. He got over his cervical injuries rapidly and completely. He also recovered from the injury to his back, except that it has always been weak since, and he has been unable to lift heavy loads. Constipation and some atony of the bladder persisted.

In March, 1877, about seven months before admission, the ends of the left middle and ring fingers were accidentally cut off. He recovered from this, and returned to work in May, and continued until Sept. 17th, about three weeks before admission. On Sept. 1st he first noticed a numbness in the two mutilated fingers of his

[1] Admitted to Bellevue Hospital in the service of Dr. E. G. Janeway; now under my care.

left hand. This gradually extended to the other fingers and up the arm to the shoulder. It was accompanied with tingling and weakness. About the same time he noticed that his knees were weak. Two or three days later the right arm became involved just as the left had been. Then his legs grew weaker; they seemed sore, and after exertion the muscles trembled. After this all of the extremities grew progressively weaker. Within a month rigidity set in. These symptoms continued and disabled him for work. There was not much pain. Constipation and paresis of the bladder were present. His appetite continued good, and he lost no flesh.

He was admitted to the hospital Oct. 8, 1877. He then presented the appearance of a well-nourished man. His gait was slow and careful. There was marked rigidity of the muscles of the legs, so that the feet could not be lifted entirely from the floor. His arms were stiff also. There was no atrophy. There was considerable loss of sensation in the upper extremities, while the lower were, if any thing, hyperæsthetic. He complained of numbness and coldness of the hands, and could not raise them much higher than the shoulders. Tendon-reflex and antero-clonus present.

He felt tingling in the arms and legs, but had no pain. Examination of thorax, abdomen, and urine revealed nothing abnormal. Application of the faradic and of the galvanic current produced well-marked contractions. After the use of the latter, rigidity was much less. There was some rigidity in the neck, and the head was held slightly forward, but no pain or swelling.

Patient was ordered constant current three times a week, occasional applications of actual cautery to the neck, dry cups along the spine, blisters, and potas. iodide.

Dec. 14th.—Under treatment patient has obtained temporary relief from rigidity, but his general condition is much worse. The rigidity is now greater; he cannot lift his hands and arms to a level with his shoulders. The deltoids are somewhat atrophied, as are also the thenar or hypothenar muscles of the left hand. His gait is stiffer and slower; the anæsthesia of the upper extremities has increased, so that he can feel only one of the points of the æsthesiometer, however far apart they are placed. He can flex the fingers moderately well, but can only feebly extend them. The hands are held in a half-flexed position. There is an increased loss of power in the muscles of the extremities. His bowels are constipated. His appetite continues good.

He has a tight-band feeling about his thorax, especially on the left side. Tendon and simple reflexes of lower limbs normal.

Dec. 17th.—Patient was ordered to lie in bed, as movement increases his pains.

Dec. 20th.—Patient thinks that the tight-band feeling is easier, but the stiffness of arms and knees is worse.

Dec. 21st.—Patient allowed to sit up and walk about again. Is stiffest in morning when he has just risen. Has fallen several times, not having sufficient power in his hands to hold a cane. Examination to-day showed that the left hand, which is the more anæsthetic, has improved slightly. Sensation in the right hand and arm is somewhat worse than it was.

He can still flex both of his hands, and he has moderate strength of grip. There is a numb, aching sensation in his arms, but no sharp shooting pain, though this he has had occasionally. He has no headache or disturbance of vision. There is a loss of power in the intercostal muscles, and he breathes mostly by the diaphragm. His knees have become more stiff and feel sore, but show no swelling or redness. Sensation in the lower limbs is not impaired; reflexes here are also present. Electro-contractility good.

Jan. 10th.—Rigidity, anæsthesia, paralysis, and pain seem to increase. Patient walks with difficulty, and has had bad falls. For last few days has kept in bed. Has shooting pains in arms and legs, but less when they are kept quiet. Anæsthesia is beginning to appear in the legs—more in the right. Has headache sometimes. Mind clear; appetite fair; bowels kept regular by pills; urine normal. Lower limbs not atrophied; arms slightly so.

Feb. 27th.—Patient is slowly growing worse. Walks but little, and can just push his feet along. Stomach gets disordered at times; medicines are then discontinued. His left hand is quite helpless, and the grip of his right is weaker. His legs retain sensibility, but reflex action is slightly impaired. He at times has tight-band feeling in chest, especially on left side. He has pains in his joints whenever he moves them.

April 1st.—Muscular atrophy has increased, especially in the left arm. Otherwise patient is the same as at last note.

April 6th.—Patient's bowels are obstinately constipated; the bladder is paretic. Complains of more pain than he has ever yet had. It is chiefly in the joints. The sense of constriction around the thorax is oppressive. Patient feels sensations on soles of feet as of blisters and needle-pricks. The pains in the joints are aggra-

vated by movement. There is some numbness of legs; reflex action poor; but sensation of touch is normal in feet and is not delayed; the left hand is almost completely anæsthetic; the right hand is still sensitive. Atrophy of muscles progressing slowly, especially on the left. The elevators of arm and the palmer muscles are most affected. Electro-contractility fair. Rigidity of shoulders and elbow joints present.

April 11th—At 2 P. M. patient had a severe attack of dyspnœa and pain in the thorax, especially in the region of the heart; said he felt as though his chest and arms were fastened in a vice. The attack lasted an hour. During this time patient felt a strong desire to vomit, but could not. He was unable to see with either eye. On assuming a sitting posture he felt better. He had ℥ x of Magendie's sol. morph. Patient's stomach has for some days rejected almost every thing introduced into it. He was, therefore, to-day put upon rectal alimentation.

April 12th.—Enemata well retained. Every thing taken by mouth is at once rejected. Patient had three passages during the day.

April 16th.—Enamata discontinued. Patient takes brandy and milk freely. He complains of burning in soles of feet.

April 17th.—Patient has much pain all over. Ordered pill morph. sulph. (gr. $\frac{1}{4}$) every four hours. There have been no pains especially localized in neck; no tenderness or deformity. No torticollis, but head continues to be held slightly forward. Patient can rotate neck somewhat, but cannot bend the head backward.

April 19th.—Integument over sacrum being reddened and oedematous it was dressed with iodoform, and sheet-lint and an oakum ring-pad employed. Nourishment taken by mouth and retained.

April 22d.—Patient is sitting up. Appetite better. Pains less.

April 27th.—Patient sits up part of the time. Can walk with difficulty. He now has a water-bed. Digestion good. Bowels regular. Electricity has been given three times a week (generally galvanism), when patient is not suffering great pain. Potassium iodide has been given irregularly in varying doses according to the sensibility of the stomach.

May 6th.—Complains of great pain between the scapulæ. Electro-muscular contractility (faradic) very feeble on the left side, but fair on the right. More muscular atrophy of chest and arms. Lower limbs slightly and uniformly atrophied. Sensation still tolerably good in right hand and left foot, poor in right

foot, and almost absent in left hand. It is not delayed. Reflex action poor in all the members, especially on the left side.

May 11th.—Patient walks better than he has done for a long time. Pain between the scapulæ is intense. No medicine is now given. Electricity continued.

May 16th.—Pain much diminished. Bowels constipated, requiring cathartics. Electro-muscular contractility (faradic) fair on the right, but gradually diminishing on the left side.

May 20th.—Vomited once. Has a feeling of tight band around left epigastrium reaching to middle line.

May 22d.—Bad attack of dyspnœa last night. Much nausea.

May 24th.—Patient vomited several times to-day. He is very weak.

May 27th.—Respiration is very imperfectly performed. There are occasional spasmodic attacks of dyspnœa. Bowels are obstinately constipated, and appetite very poor. No vomiting to-day or yesterday.

May 31st.—No vomiting since last note. Condition unchanged.

June 28th.—Has been suffering from gastric troubles and on the whole getting worse.

July 15th.—Patient cannot stand upon his feet. Muscular electro-contractility still very fair, especially on the right side.

July 25th.—No change. Patient now has the battery (faradic) daily. Feels less stiffness and soreness after it.

Aug. 4th.—Patient's respiratory movements have been growing feebler since last note. This afternoon he has great difficulty in respiration, and complains of inability to expel mucus produced by a slight bronchitis recently contracted. The respiration is almost entirely abdominal; the intercostal muscles continue paralyzed.

Aug. 6th.—Patient has been comparatively comfortable since last note. At noon to-day he had another spasmodic attack of dyspnœa, which was relieved by morphia hypodermically. He is obliged to remain in bed, but can sit up. Can move lower limbs somewhat. His left arm is almost paralyzed, and hangs half-flexed by his side. He can slightly move the fingers. At rest they remain semi-flexed, but the wrist is not drawn back. The hand does not present the typical *main en griffe* as in Charcot's cases. The right hand is not deformed at all.

Aug. 19th.—Gets weaker daily. Bedsore over sacrum getting larger. Requires hypodermics night and morning on account of pains in back of neck and extremities.

Aug. 24th.—Has had occasional attacks of dyspnœa. There is almost complete paralysis of extremities, with some rigidity, most in the arms.

Aug. 28th.—No particular change, except that patient is growing weaker gradually. For pains in back and neck he has had hypodermics of morphia. He has involuntary evacuations of fæces and urine. Can sit up in bed only a short while. Is in a critical condition. Has not been able to take medicine for some time.

Sept. 10th.—Patient complains that the vibrations of his bed, caused by the walking of any one across the floor, give him very great pain in all parts of his body.

Sept. 19th.—No change, except that appetite is better.

" 25th—General condition rather better. No paroxysms of dyspnœa.

Oct. 10th.—Morphia discontinued. Patient suffered at first, but pain soon ceased to trouble him. He gradually improved after this, and in a few months was able to walk slowly; could use his hands and arms to feed himself; was not troubled by pains.

His improvement continued very gradually until May, 1881. He took no medicine during this time. At the date mentioned he began to get worse again, though very slowly. He was discharged from the hospital last summer. Lately he has been under my care. I made a careful examination of him Dec. 27, 1881.

He was confined to bed most of the time, but could walk a little. Appetite and digestion fair. Constipation and atony of bladder present. Facies, mind, and special senses normal. Some motion had returned to intercostal muscles. Both deltoids atrophied, the left the more. Some general atrophy of left arm, less of right; left thenar and hypothenar muscles considerably affected. Can flex and extend both hands, but there is little power in the left. It hangs with fingers semi-flexed and wrist slightly drawn back, just suggesting the *main en griffe*. Left forearm half-flexed, left elbow and shoulder rigid. Considerable anæsthesia in left arm, a small amount in right; paræsthesiæ in both extremities; also pains felt, especially in hands. Reflex action is above the normal. Tremor is excited by percussing left arm, and by voluntary movement.

Lower extremities not much atrophied, the left more of the two. Anæsthesia present to moderate extent in both. Tendon-reflex and simple reflex exaggerated. Ankle-clonus could not be obtained. Sensation in legs (or arms) not delayed appreciably.

Left limb has been improving, right limb getting worse since May. Tremor is often excited in left leg by attempts to use it.

Electro-contractility (faradic) absent in left arm and both legs. Elsewhere it is normal.

In the past two weeks the patient has had, while dozing or as he is about to wake, sudden powerful and painful contractions of the arms and legs. He is drawn all into a heap, as he expresses it, for half a minute or less. The spasm then passes off. There is a sharp pain and sensation of fulness in the occiput at the same time.

Patient now has pains in chest and limbs. There is no notable pain, tenderness, or deformity in the neck. Patient still carries his head forward, as he used to do.

CASE 2.—PACHYMENINGITIS HÆMORRHAGICA CHRONICA—INVOLVEMENT OF CORTEX—GRANULAR EPENDYMA—NO SYMPTOMS.[1]

A. L., single; age, 35; nativity, Scotland; occupation, moulder. Family healthy. Patient had variola three years ago; has had no other sickness. Has drunk very much; denies syphilis. His occupation exposes him to great heat, and calls for great exertion. Of late he has been drinking hard.

Seven days before admission he was taken with severe headache, stomach-ache, vomiting, and pain in right side. Had no chill, fever, cough, or expectoration. He continued to feel ill and to drink hard until Jan. 2d, when he was admitted to the cells as a case of alcoholism.

He was a medium-sized, strongly-built man; was weak, tremulous, and disturbed in mind. He complained of no especial pain, and nothing abnormal was found in chest or abdomen. This was in the morning. In the afternoon he had a chill, severe pain just below the right axilla, a slight cough, no expectoration, a temperature of $103\frac{1}{4}^{\circ}$. On examining him in the evening a small spot of consolidation was found in the middle lobe of right lung. He was still very restless and tremulous. Ordered quinine, gr. xx, and pil. opii., gr. i, whiskey, ℥ iv per day.

Jan. 3d.—Pulse, A.M., 130; resp., 27; temp., 102°.
" " P.M., 110; " 22; " 103°.

Patient slept greater part of the night. No expectoration, and only occasional cough. Well-marked consolidation of right middle lobe. Bowels open; eats well. Mind dull, but no delirium. Cheeks not flushed. Respiration not panting. Pulse full, com-

[1] In the service of Dr. A. Flint.

pressible ; skin dry ; tongue moist and white ; urine pale, acid ; sp. gr., 1020. Ordered quinine, gr. x, *t. i. d.*

Jan. 4th., A.M.—Pulse, 128 ; resp., 31 ; temp., $104\frac{1}{4}^{\circ}$.

" P.M. " " " 102°.

Patient did not sleep last night, and has not done so to-day. Has pain in right side and headache, occasional cough, and in afternoon spits up a little tenacious, brownish sputa. Crepitant râles heard in right lower lobe behind. Toward night patient grew very wild and delirious. At about 10 P.M he received gr. j of opium. This did no good. At 12.30 he had gr. xxv of chloral, and three quarters of an hour later gr. xv more. His pupils became finely contracted ; his respiration labored and irregular ; his heart beat very feebly ; he was given atropia sulph. and whiskey.

At 8 A.M., Jan. 5th, he died.

AUTOPSY.

Body.—Frozen.

Lungs.—Right middle lobe in third stage ; lower lobe passing into second. Left lung intensely congested, and there was a point in both lobes where red hepatization was beginning.

Pericardium.—Cavity filled with serous fluid to amount of ℥ ii–℥ iii.

Brain.—Over the inner surface of the dura mater, especially at the sides, was a thin membrane of organized lymph, and in it at various points were hemorrhages.

The hemorrhages were of various ages, but none very new. When there were no marked hemorrhages the membrane was stained yellow with pigment. The dura mater was not adherent to the pia.

The skull was sound, the crista galli very long and sharp ; the orbital plates of the frontal bone bulged up markedly, and on the under surface of the anterior lobe, corresponding to these plates, were points where the brain tissue was sclerosed in part, and in part a little softened. These places were the size of a half dollar.

There was another point on the surface of the left ascending parietal convolution, the size of a dime, where there was staining, sclerosis, and softening, with pachymeningitis in the dura mater over it. The lateral ventricles were enormously distended and filled with serous fluid. The lining membrane was thickened, and had a granular appearance. The venæ Galeni were large, but there was no obstruction. The brain substance was atrophied.

Spinal cord.—Could find no change.

Liver.—Large, with long left lobe and slight cirrhotic change.

CASE 3.—PACHYMENINGITIS—INVOLVEMENT OF CORTEX—SYMPTOMATIC EPILEPSY.

John D., single, Ireland, age 32, stone-cutter. The patient belongs to a healthy family. He himself never had any sickness before the present one. He has been a moderate drinker, and denies having had syphilis.

Three years before admission he caught his foot on the curbing and fell, striking the back of his head on the flag-stone. He was stunned by the fall, but recovered enough to walk home, and in a few days seemed to be perfectly well.

About two years ago he began to have the convulsions, which have continued and increased upon him ever since. They at first occurred only every three months, but soon came on every month, and that was the rate of frequency on admission. He had but one at a time. The attacks, as nearly as could be ascertained, were characterized by headache and dizziness, with occasional vomiting (which lessened the intensity). Following this, clonic spasms of the extremities and loss of consciousness. In five or ten minutes he would come out of them, and sleep, or remain quiet. As the fits continued his mind became affected. He was dull and forgot things easily. His speech was slow and embarrassed. His eyesight became less perfect. Though he could recognize every thing about him readily he could not see to read easily.

He had headaches accompanying each attack. These at first left him with the attack, but since eight months ago they have been nearly constant. He has felt some tingling and numbness on the left side of the body, but he had no loss of power. His bowels have been obstinately constipated, and he has used "salts" to keep them open. When they were open the attacks were less severe.

The patient's general condition becoming worse, he was, on Oct. 31, 1877, admitted to the hospital.

The patient, on admission, was a large robust man, somewhat anæmic but not emaciated.

The dull, fixed look of his face was noted. The pupils were normal; the tongue did not deviate on protrusion.

There was no loss of power in the extremities, nor was any anæsthesia detected. The thorax and abdominal organs were normal. Pulse, respiration, and temperature were normal. The patient was too dull to make complaints. He could only speak a

few words. He was distinctly aphasic, seeming to have lost the memory of words.

His urine was very dark, acid, sp. gr. 1021, and contained no albumen. He was ordered potas. iodide and potas. bromide.

Patient has a fractured clavicle for which he was treated with a Sayre's bandage.

Toward night of the day of entrance he was attacked with one of his usual convulsions. These were at first tonic then clonic in character. They affected the whole body, and lasted one or two minutes. The upper extremities were affected most. There was loss of consciousness.

Nov. 5th.—The patient is a little brighter than on entrance. He does not complain of headache, and has had no more convulsions.

Nov. 6th.—The patient has short attacks of delirium in which he tries to tear off his splints, while his language is frequent and painful and free.

Nov. 8th.—The patient has been more quiet, but he is still out of his head and aphasic. He answers all questions with "No, sir." His urine has to be drawn morning and night.

Nov. 10th.—The patient is becoming indecent and ungovernable at times. Last night he vomited on the floor; tried to get into another man's bed, and then went and climbed up on the medicine table.

Nov. 12th.—Patient was transferred to the cells, where he has been quiet. He managed to loosen even the plaster of Paris bandages fixing his clavicle, and a new dressing was put on to-day.

Nov. 14th.—Patient has been quiet since entering the cells. He now talks a good deal, but always in a wandering way. He considers the tying of his hands all nonsense; is easily affected to tears. He has no pain. He managed to get his hand out of the bandage, and six plaster-of-Paris rollers were put on over it.

Nov. 17th.—Patient is improving. Talks almost sensibly at times, though he still has some aphasia.

Nov. 30th.—Patient is about the same.

Dec. 2d.—Patient has been slowly improving since last note. He has had no more convulsions or headaches. His mind was quite clear, though not very active. His aphasia has improved, but he still hesitates in speech and has difficulty in recalling words. He has had a cough at night which disturbed him for a time, but feels relieved to-day. His fractured clavicle has united, and his shoulders are in good condition.

March 2, 1878.—Patient had been steadily improving, and

seemed to be convalescing until recently. He has not been feeling well for one or two days. This evening he was found to have croupous pneumonia. His condition is unfavorable; pulse weak and rapid, and mind not very clear. He had no initial chill. He was ordered whiskey and quinine, and was transferred from cells to Ward 19.

March 3d.—He was very weak during the day, and part of the time unconscious. Temperature, at 11:30 A.M., 102½°; gr. x quinine are given. At noon ℥ ss whiskey every two hours was ordered; at 3:30 P.M. temperature 102½°; 5:30 P.M., 102½°; 7:30, 102½°. During the night œdema of lungs came on. He was cupped; whiskey, milk, digitalis, and oxygen were given, which measures temporarily relieved him.

March 4th.—Patient grew very weak toward morning. At 6 A.M. ordered whiskey, ℥ ss every half hour. At 7:30 temperature 100¼°. Patient lay unconscious; pupils not responding; breathing stertorous; face very pale and covered with perspiration. Some œdema of lungs; pericardial friction sound; pulse weak. Ordered oxygen, which relieved him for a while. At 10 A.M. temperature 98½°; at 2:35 P.M., died.

AUTOPSY.

Body.—Very rigid.

Brain.—The dura mater over the anterior part of occipital lobe and posterior part of temporo-sphenoidal lobe on left side was thickened and adherent to pia mater, and that to the cortical substance of the brain. These membranes were involved to the extent of a space half as large as the palm of the hand. Its centre was near the augular gyrus. The brain tissue beneath the affected membranes was involved. The gray matter appeared indurated and worm-eaten, as did also the white substance beneath it. It presented the appearance of an old laceration.

The rest of the brain was normal, including island of Reil, etc. Other organs not examined.

PACHYMENINGITIS (HÆMORHAGICA)—SYMPTOMS OF PRESSURE—EPILEPTIFORM CONVULSIONS.[1]

Annie L., married, Ireland, age 30. No family history could be obtained. Patient's husband stated that three days before admission patient was very drunk; that night she was taken with

[1] Service of Dr. Austin Flint.

convulsions ; these were repeated more or less frequently till admission. On admission to office patient appeared stupid. The left side of the face was paralyzed, also the left arm. The examination was incomplete. Patient was sent to lodging-house. While there she had several convulsions, and in the morning was found in a semi-comatose condition. The convulsions were thought to be epileptic, and patient was sent to the French cells—as she was in a very filthy condition.

On admission to wards patient is found in a comatose condition, with pulmonary œdema ; hypodermics of whiskey were given, and 50 or 60 cups applied to chest. Patient's tongue was lacerated in several places, and the lips covered with blood. Shortly after admission into ward the coma became less, and patient would open and close the eyes and move extremities. Reflex action was imperfect ; there was no complete paralysis of face or any of the extremities ; but the left arm would fall with a deader weight than the right, yet patient would move it when irritated or at will ; at times the right arm was rigid, but never the left. Prolonged pricking of the right arm would not cause motion, showing anæsthesia ; yet the patient could move the arm ; irritation of the left arm would cause motion ; the lower extremities responded to irritations and were not rigid. The pupils were normal and responded till toward latter part of the day, when they both became contracted and remained so till death.

Patient would open and shut the eyes ; once attempted to talk, and made motion for drink ; no paralysis was present at any time whilst in the ward ; temperature on admission was normal, but commenced to rise in the P.M.; the pulse was full, beating at about 90 till the latter part of the afternoon, when it became more frequent ; the urine contained a small amount of albumen, and two epithelial casts were found ; urine was passed several times in bed, and in quite large quantities. The pulmonary œdema cleared up by cupping and whiskey ; kidneys also were cupped. During the P. M. patient had three or four convulsions, limited to the face and arms, also some movements of the body ; the convulsions were clonic in character, and lasted a minute or so ; during them the mouth was widely distended and face drawn over to left side ; the eyes of both sides would open and shut rapidly, and patient made loud sounds at the commencement of the attacks.

After they had passed off patient would become unconscious, from which condition she would partly rally. The pulse during the attack would become very rapid, but finally would slow

up, the force remaining the same. With the exception of sonorous râles, physical examination of lungs revealed nothing. The first sound of the heart was loud and sharp, the second almost imperceptible. The pupils were normal at the time of the convulsions that occurred early in the P. M., but in the evening they were evenly contracted and remained so after the convulsions had passed off. Ordered whiskey hypodermically, ℥ ss every hour and ol. tiglii gtt. ii every hour till bowels moved. At 11.30 P.M., bowels not moving, the oil was increased to gtt. vi every hour. This treatment produced no passage from the bowels.

6.30 P. M., temp. 102° 9.30 P. M., pulse 152
7.30 " " 103° 10.30 " temp. 104¾°
12.30 A. M., pulse 140, temp. 104¾°, resp. 40.

Patient had some five or six convulsions after admission into ward; she gradually became more stupid, coma developed, and at 2.30 A. M. she died. AUTOPSY. *Brain.*—A large surface clot (recent) on right side of brain below dura mater and arachnoid, causing greater pressure just posterior to the ascending parietal convolution. In the right posterior fossa a false membrane was peeled off from the dura mater, said membrane containing nucleated fusiform cells and bloodvessels and a large number of young cells.

Other organs normal.

PACHYMENINGITIS HÆMORRHAGICA—SYMPTOMS OF PRESSURE.[1]

A. L., widow, Ireland, domestic. No family history obtained. Patient's friends state that she has been for a long time addicted to the excessive use of alcohol. No history of any past diseases was obtained.

Patient had been suffering for a long time from severe frontal headache. Lately she has complained of cramps in stomach, and has occasionally vomited. She has used tr. opii camph. for her pain. Aside from above, patient has been healthy and strong, except for rheumatism in her right arm some time since. Of late all symptoms of rheumatism have disappeared.

On Wednesday, April 10th, patient was about as she had been for some time. On the 11th she was found in a semi-comatose condition, in which she remained up to time of admission, three days later. She had taken nourishment quite readily, and had

[1] Service of Dr. E. G. Janeway.

roused from her stupor a little at times. Face was œdematous when she was first found comatose, but there were no evidences of injury.

On admission, April 14, 1878, patient was in a semi-unconscious state. None of her limbs were paralyzed, nor was her face. Both her arms were rigid ; her legs were very slightly so. She had slight emprosthotonus.

Sensation and reflex action normal. Pupils normal. Patient swallowed well. Pulse regular and strong. Urine contained a moderate amount of albumen. Lungs and heart normal. Pulse, 104 ; resp., 29 ; temp., normal.

Patient's kidneys were at once cupped. During this operation the countenance manifested pain. Ordered ol. tig., gtt. iv, with tr. digitalis, gtt. xv, in glycerine, and hot-air bath ; also whiskey, ℥ ss every three hours, and as much milk as she would take. A blister was applied to her neck, and directions given to administer tr. digitalis, gtt. x, at 2 A.M., and U. S. morph. in case of pain. As no diaphoresis was produced by hot-air bath, patient had tr. jaborandi, ℥ i, at 11 and 12. This caused sweating at 12.30. Bowels moved freely. At 1 A. M. the pulse began to grow weaker ; slight twitchings were observed, and at 2.15 A. M. patient died. AUTOPSY. *Kidneys.*—Small. Capsule adherent over parts of surface. Malpig. bodies fewer than in health. Red and white lines in cortex not well defined. Granular degeneration.

Brain.—Dura mater not abnormally adherent to bone. On inner surface of dura mater, on right side, was a large hematoma, covering the anterior and middle lobes, flattening and narrowing the convolutions of that side, and flattening and widening those of the opposite side.

The innermost part of the clot was still in a semi-fluid state. External to this was an older coagulum, and beneath the latter was a fully organized false membrane, evidently quite old, which, under the microscope, showed fully formed connective-tissue elements and thin-walled blood-vessels.

The arachnoid and pia mater were normal.

The spinal cord was normal, with the exception of a few small calcareous plates found in the arachnoid of the lower part of the cord.

Other organs normal.